NMCP COVID-19 Literature Report #54: Friday, 08 January 2021

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Purpose: These weekly reports, published on Fridays, are curated collections of current research, evidence reviews, special reports, grey literature, and news regarding the COVID-19 pandemic that may be of interest to medical providers, leadership, and decision makers.

All reports are available online at https://nmcp.libguides.com/covidreport. Access is private; you will need to use the direct link or bookmark the URL, along with the case-sensitive password "NMCPfinest".

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, I cannot cover everything in the literature on COVID-19. Please feel free to reach out with questions, suggestions for future topics, or any other feedback.

Statistics

Global today: 88,203,229 confirmed cases and 1,901,510 deaths in 191 countries/regions

30 DEC 2020: 82,100,010 confirmed cases and 1,793,150 deaths in 191 countries/regions

18 DEC 2020: 75,179,482 confirmed cases and 1,667,124 deaths in 191 countries/regions

United States*   top 5 states by cases

	TOTAL US	CA	TX	FL	NY	IL
Cases	21,589,666	2,576,453	1,910,091	1,429,722	1,081,885	1,008,045
Tests	259,614,820	34,760,355	14,445,909	16,451,278	26,572,232	13,803,946
Deaths	365,448	28,579	29,498	22,481	39,118	18,941

*see census.gov for current US Population data; NA: not all data available   JHU CSSE as of 1000 EDT 08 January 2021

Virginia is ranked 20th in cases and 23rd in deaths.

Virginia	Total (state)	Chesapeake	Hampton	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach
Cases	387,917	10,105	4,953	6,710	9,806	5,075	4,395	19,314
Hospitalizations	18,918	633	204	211	600	457	250	809
Deaths	5,312	107	52	73	114	87	94	164

VA DOH as of 1000 EDT 08 January 2021

New Year, Same Old Pandemic (But Newish Network Problems)

BLUF: Use Firefox and ask a librarian for help.

Welcome to 2021, year 2 of the COVID-19 pandemic. There has been a lot going on this first week of January. One thing you may have noticed in all the chaos is problems getting to full text articles and/or library resources, especially when on a networked computer.

For example, if you are in PubMed and click on our access buttons, you may get a login screen and then an error message about a "Bad Request" message. You may also have problems opening up PDFs, sites asking for a DHA login, or see that content is blocked by "Menlo Security".

Library Services is working on solutions. In the meantime, the best thing to do when on an NMCP networked computer (or using VPN) is to use Firefox as your browser, rather than IE/Edge or Chrome. (If you don't see Firefox on your NMCP computer, look for it in the Software Center and download.) You should have fewer problems when off the network and using your OpenAthens account login. This not a perfect fix, but it takes care of many problems.

If you still have problems getting to library resources or need help with OpenAthens, email Library Services at usn.hampton-roads.navhoppsporsva.list.nmcp-library@mail.mil. Tell us what browser you are using and what you are encountering. We may ask several clarifying questions before we can give you a solution, so please bear with us as we work through these access issues.

Special Reports

REACH: The Effects of School Reopenings on COVID-19 Hospitalizations (04 January 2021)

"We provide the first broad-scale evidence regarding the effect of school reopenings on COVID-19 health outcomes. We specifically focus on COVID-19-related hospitalizations, which directly measure the health outcomes of greatest interest and are not subject to the numerous measurement problems that arise with virus positivity rates and contact tracing. We also address selection bias in school reopening decisions by using panel analysis of weekly school reopening and COVID-19 hospitalization data for almost every county in the nation. In addition to fixed effects and matched difference-in-differences methods, we use teacher bargaining power as an instrumental variable. For counties whose pre-opening total new COVID-19 hospitalization rates were below roughly 36-44 per 100,000 population per week (roughly the 75th percentile of counties during the summer), we find no effect of in-person school reopening on COVID-19 hospitalization rates. For these counties, the estimates are robust to alternative school reopening and hospitalization data sources, the addition of controls for general state social distancing policies and college opening modes,

and alternative estimation methods. For counties where total baseline new hospitalizations are above the 36-44 new hospitalizations per 100,000 per week, the estimates are inconsistent across methods and are therefore inconclusive. Our work contributes to the ongoing debate on teaching modes during the COVID-19 pandemic and the costs and benefits of remote education."

See also: NPR article

Selected Literature: Peer-Reviewed Journals

Date given is the date published or posted online; often these papers are ahead of print.

08 January 2021

MMWR: Opening of Large Institutions of Higher Education and County-Level COVID-19 Incidence — United States, July 6–September 17, 2020

"What is already known about this topic? Increasing COVID-19 incidence was observed among young adults in August 2020, and outbreaks have been reported at institutions of higher education (colleges and universities).

What is added by this report? U.S. counties with large colleges or universities with remote instruction (n = 22) experienced a 17.9% decrease in incidence and university counties with in-person instruction (n = 79) experienced a 56% increase in incidence, comparing the 21-day periods before and after classes started. Counties without large colleges or universities (n = 3,009) experienced a 6% decrease in incidence during similar time frames.

What are the implications for public health practice? Additional implementation of effective mitigation activities at colleges and universities with in-person instruction could minimize on-campus COVID-19 transmission and reduce county-level incidence."

06 January 2021

MMWR: Allergic Reactions Including Anaphylaxis After Receipt of the First Dose of Pfizer-BioNTech COVID-19 Vaccine — United States, December 14–23, 2020

"What is already known about this topic? Anaphylaxis is a severe, life-threatening allergic reaction that occurs rarely after vaccination.

What is added by this report? During December 14–23, 2020, monitoring by the Vaccine Adverse Event Reporting System detected 21 cases of anaphylaxis after administration of a

reported 1,893,360 first doses of the Pfizer-BioNTech COVID-19 vaccine (11.1 cases per million doses); 71% of these occurred within 15 minutes of vaccination.

What are the implications for public health practice? Locations administering COVID-19 vaccines should adhere to CDC guidance for use of COVID-19 vaccines, including screening recipients for contraindications and precautions, having the necessary supplies available to manage anaphylaxis, implementing the recommended postvaccination observation periods, and immediately treating suspected cases of anaphylaxis with intramuscular injection of epinephrine."

NEJM: Early High-Titer Plasma Therapy to Prevent Severe Covid-19 in Older Adults

"We conducted a randomized, double-blind, placebo-controlled trial of convalescent plasma with high IgG titers against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in older adult patients within 72 hours after the onset of mild Covid-19 symptoms. The primary end point was severe respiratory disease, defined as a respiratory rate of 30 breaths per minute or more, an oxygen saturation of less than 93% while the patient was breathing ambient air, or both. The trial was stopped early at 76% of its projected sample size because cases of Covid-19 in the trial region decreased considerably and steady enrollment of trial patients became virtually impossible.

A total of 160 patients underwent randomization. In the intention-to-treat population, severe respiratory disease developed in 13 of 80 patients (16%) who received convalescent plasma and 25 of 80 patients (31%) who received placebo (relative risk, 0.52; 95% confidence interval [CI], 0.29 to 0.94; P=0.03), with a relative risk reduction of 48%. A modified intention-to-treat analysis that excluded 6 patients who had a primary end-point event before infusion of convalescent plasma or placebo showed a larger effect size (relative risk, 0.40; 95% CI, 0.20 to 0.81). No solicited adverse events were observed.

Early administration of high-titer convalescent plasma against SARS-CoV-2 to mildly ill infected older adults reduced the progression of Covid-19."

Science: Immunological memory to SARS-CoV-2 assessed for up to 8 months after infection

"Understanding immune memory to SARS-CoV-2 is critical for improving diagnostics and vaccines, and for assessing the likely future course of the COVID-19 pandemic. We analyzed multiple compartments of circulating immune memory to SARS-CoV-2 in 254 samples from 188 COVID-19 cases, including 43 samples at ≥ 6 months post-infection. IgG to the Spike protein was relatively stable over 6+ months. Spike-specific memory B cells were more abundant at 6 months than at 1 month post symptom onset. SARS-CoV-2-specific CD4+ T cells and CD8+ T cells declined with a half-life of 3-5 months. By studying antibody, memory B cell, CD4+ T cell, and CD8+ T cell memory to SARS-CoV-2 in an integrated manner, we observed that each component of SARS-CoV-2 immune memory exhibited distinct kinetics."

05 January 2021

JAMA Netw Open: [Estimation of US SARS-CoV-2 Infections, Symptomatic Infections, Hospitalizations, and Deaths Using Seroprevalence Surveys](#)

> "Question: Accounting for underreporting, what is the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease burden in the US?
>
> Findings: In this cross-sectional study using data from public health surveillance of reported coronavirus disease 2019 cases and seroprevalence surveys, an estimated 46 910 006 SARS-CoV-2 infections, 28 122 752 symptomatic infections, 956 174 hospitalizations, and 304 915 deaths occurred in the US through November 15, 2020.
>
> Meaning: Findings of this study suggest that although more than 14% of the US population was infected with SARS-CoV-2 by mid-November, a substantial gap remains before herd immunity can be reached."

Thorax: [Current smoking and COVID-19 risk: results from a population symptom app in over 2.4 million people](#)

> The association between current tobacco smoking, the risk of developing symptomatic COVID-19 and the severity of illness is an important information gap.
>
> UK users of the Zoe COVID-19 Symptom Study app provided baseline data including demographics, anthropometrics, smoking status and medical conditions, and were asked to log their condition daily. Participants who reported that they did not feel physically normal were then asked by the app to complete a series of questions, including 14 potential COVID-19 symptoms and about hospital attendance. The main study outcome was the development of 'classic' symptoms of COVID-19 during the pandemic defined as fever, new persistent cough and breathlessness and their association with current smoking. The number of concurrent COVID-19 symptoms was used as a proxy for severity and the pattern of association between symptoms was also compared between smokers and non-smokers.
>
> Between 24 March 2020 and 23 April 2020, data were available on 2 401 982 participants, mean (SD) age 43.6 (15.1) years, 63.3% female, overall smoking prevalence 11.0%. 834 437 (35%) participants reported being unwell and entered one or more symptoms. Current smokers were more likely to report symptoms suggesting a diagnosis of COVID-19; classic symptoms adjusted OR (95% CI) 1.14 (1.10 to 1.18); >5 symptoms 1.29 (1.26 to 1.31); >10 symptoms 1.50 (1.42 to 1.58). The pattern of association between reported symptoms did not vary between smokers and non-smokers.
>
> These data are consistent with people who smoke being at an increased risk of developing symptomatic COVID-19."

04 January 2021

Cardiovasc Drugs Ther: [The Association of Low Molecular Weight Heparin Use and In-hospital Mortality Among Patients Hospitalized with COVID-19](#)

"We conducted a retrospective study of patients consecutively enrolled from two major academic hospitals exclusively for COVID-19 in Wuhan, China, from January 26, 2020, to March 26, 2020. The primary outcome was adjusted in-hospital mortality in the LMWH group compared with the non-LMWH group using the propensity score.

Overall, 525 patients with COVID-19 enrolled with a median age of 64 years (IQR 19), and 49.33% men. Among these, 120 (22.86%) were treated with LMWH. Compared with the non-LMWH group, the LMWH group was more likely to be older and male; had a history of hypertension, diabetes, coronary heart disease (CHD), or stroke; and had more severe COVID-19 parameters such as higher inflammatory cytokines or D-dimer. Compared with non-LMWH group, LMWH group had a higher unadjusted in-hospital mortality rate (21.70% vs. 11.10%; p = 0.004), but a lower adjusted mortality risk (adjusted odds ratio [OR], 0.20; 95% CI, 0.09-0.46). A propensity score-weighting analysis demonstrated similar findings (adjusted OR, 0.18; 95% CI, 0.10-0.30). Subgroup analysis showed a significant survival benefit among those who were severely (adjusted OR, 0.07; 95% CI, 0.02-0.23) and critically ill (adjusted OR, 0.32; 95% CI, 0.15-0.65), as well as among the elderly patients' age > 65, IL-6 > 10 times upper limit level, and D-dimer > 5 times upper limit level.

Among hospitalized COVID-19 patients, LMWH use was associated with lower all-cause in-hospital mortality than non-LMWH users. The survival benefit was particularly significant among more severely ill patients."

Clin Infect Dis: [SARS-CoV-2 encephalitis is a cytokine release syndrome: evidences from cerebrospinal fluid analyses](#)

"Recent findings indicated that SARS-CoV-2 related neurological manifestations involve cytokine release syndrome along with endothelial activation, blood brain barrier dysfunction, and immune-mediated mechanisms. Very few studies have fully investigated the CSF correlates of SARS-CoV-2 encephalitis.

Patients with PCR-confirmed SARS-CoV-2 infection and encephalitis (COV-Enc), encephalitis without SARS-CoV-2 infection (ENC) and healthy controls (HC) underwent an extended panel of CSF neuronal (NfL, T-tau), glial (GFAP, TREM2, YKL-40) and inflammatory biomarkers (IL-1β, IL-6, Il-8, TNF- α, CXCL-13 and β2-microglobulin).

Thirteen COV-Enc, 21 ENC and 18 HC entered the study. In COV-Enc cases, CSF was negative for SARS-CoV-2 real-time PCR but exhibited increased IL-8 levels independently from presence of pleocytosis/hyperproteinorracchia. COV-Enc patients showed increased IL-6, TNF- α, and β2-microglobulin and glial markers (GFAP, sTREM-2, YKL-40) levels similar to

ENC but normal CXCL13 levels. Neuronal markers NfL and T-Tau were abnormal only in severe cases.

SARS-CoV-2-related encephalitis were associated with prominent glial activation and neuroinflammatory markers, whereas neuronal markers were increased in severe cases only. The pattern of CSF alterations suggested a cytokine-release syndrome as the main inflammatory mechanism of SARS-CoV-2 related encephalitis."

Clin Microbiol Infect: Antibiotic prescribing in patients with COVID-19: rapid review and meta-analysis

"The proportion of patients infected with SARS-CoV-2 that are prescribed antibiotics is uncertain, and may contribute to patient harm and global antibiotic resistance. Our objective was to estimate the prevalence and associated factors of antibiotic use in patients with confirmed COVID-19.

We searched MEDLINE, OVID Epub and EMBASE for published literature on human subjects in English up to June 9, 2020. Inclusion criteria were any healthcare settings and age groups; randomized controlled trials; cohort studies; case series with >10 patients; experimental or observational design that evaluated antibiotic prescribing. The main outcome of interest was proportion of COVID-19 patients prescribed an antibiotic, stratified by geographical region, severity of illness, and age. We pooled proportion data using random effects meta-analysis.

We screened 7469 studies, from which 154 were included in the final analysis. Antibiotic data were available from 30,623 patients. The prevalence of antibiotic prescribing was 74.6% (95% CI 68.3 to 80.0%). On univariable meta-regression, antibiotic prescribing was lower in children (prescribing prevalence odds ratio (OR) 0.10, 95%CI 0.03 to 0.33) compared to adults. Antibiotic prescribing was higher with increasing patient age (OR 1.45 per 10 year increase, 95%CI 1.18 to 1.77) and higher with increasing proportion of patients requiring mechanical ventilation (OR 1.33 per 10% increase, 95%CI 1.15 to 1.54). Estimated bacterial co-infection was 8.6% (95% CI 4.7-15.2%) from 31 studies.

Three-quarters of patients with COVID-19 receive antibiotics, prescribing is significantly higher than the estimated prevalence of bacterial co-infection. Unnecessary antibiotic use is likely high in patients with COVID-19."

Emerg Infect Dis: Excess Deaths during Influenza and Coronavirus Disease and Infection-Fatality Rate for Severe Acute Respiratory Syndrome Coronavirus 2, the Netherlands

"Since the 2009 influenza pandemic, the Netherlands has used a weekly death monitoring system to estimate deaths in excess of expectations. We present estimates of excess deaths during the ongoing coronavirus disease (COVID-19) epidemic and 10 previous influenza epidemics. Excess deaths per influenza epidemic averaged 4,000. The estimated 9,554

excess deaths (41% in excess) during the COVID-19 epidemic weeks 12–19 of 2020 appeared comparable to the 9,373 excess deaths (18%) during the severe influenza epidemic of 2017–18. However, these deaths occurred in a shorter time, had a higher peak, and were mitigated by nonpharmaceutical control measures. Excess deaths were 1.8-fold higher than reported laboratory-confirmed COVID-19 deaths (5,449). Based on excess deaths and preliminary results from seroepidemiologic studies, we estimated the infection-fatality rate to be 1%. Monitoring of excess deaths is crucial for timely estimates of disease burden for influenza and COVID-19. Our data complement laboratory-confirmed COVID-19 death reports and enable comparisons between epidemics."

Emerg Infect Dis: [Rapid Transmission of Severe Acute Respiratory Syndrome Coronavirus 2 in Detention Facility, Louisiana, USA, May–June, 2020](#)

"To assess transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in a detention facility experiencing a coronavirus disease outbreak and evaluate testing strategies, we conducted a prospective cohort investigation in a facility in Louisiana, USA. We conducted SARS-CoV-2 testing for detained persons in 6 quarantined dormitories at various time points. Of 143 persons, 53 were positive at the initial test, and an additional 58 persons were positive at later time points (cumulative incidence 78%). In 1 dormitory, all 45 detained persons initially were negative; 18 days later, 40 (89%) were positive. Among persons who were SARS-CoV-2 positive, 47% (52/111) were asymptomatic at the time of specimen collection; 14 had replication-competent virus isolated. Serial SARS-CoV-2 testing might help interrupt transmission through medical isolation and quarantine. Testing in correctional and detention facilities will be most effective when initiated early in an outbreak, inclusive of all exposed persons, and paired with infection prevention and control."

JAMA: [Changes in Abortion in Texas Following an Executive Order Ban During the Coronavirus Pandemic](#)

"This study uses data from the GeoBirth pregnancy cohort of all births in 2 hospitals in Philadelphia to examine whether rates of preterm birth, spontaneous preterm birth, medically indicated preterm birth, and stillbirth have changed during the SARS-CoV-2 pandemic compared with prepandemic rates."

JAMA Netw Open: [Public Concern About Violence, Firearms, and the COVID-19 Pandemic in California](#)

"Questions: Is the coronavirus disease 2019 (COVID-19) pandemic associated with changes in individuals' worry about violence happening to themselves or others, the prevalence of and reasons for firearm and ammunition acquisition, and changes in firearm storage practices?

Findings: In this survey study of 2870 adults in California, worry about multiple types of violence for oneself increased during the pandemic. Individuals expressed concern that someone else might physically harm themselves because of pandemic-related losses; there was an increase in firearm acquisition and in unsecure storage practice of loaded firearms in response to the pandemic.

Meaning: The findings of this study suggest that the COVID-19 pandemic and efforts to lessen its spread have compounded the public health burden of violence."

03 January 2021

Clin Infect Dis: [Longitudinal testing for respiratory and gastrointestinal shedding of SARS-CoV-2 in day care centres in Hesse, Germany](#)

"With the pandemic of SARS-CoV-2 ongoing in Europe in June of 2020, day care centres were reopened in the state of Hesse, Germany, after the lockdown. The role young children play in the dynamics of the transmission was unknown.

We conducted a longitudinal study over a period of 12 weeks and two days (18 th of June 2020 to 10 th of September, 2020) to screen attendees and staff from day care centres in the state of Hesse, Germany, for both respiratory and gastrointestinal shedding of SARS-CoV-2. 859 children (age range 3 months to 8 years) and 376 staff members from 50 day care centres, which were chosen representatively from throughout the state, participated in the study. Parents were asked to perform both a buccal mucosa and an anal swab on their children once a week. Staff were asked to self-administer the swabs. RT-PCRs for SARS-CoV-2 were performed in a multiple-swab pooling protocol.

7,366 buccal mucosa swabs and 5,907 anal swabs were analysed. No respiratory or gastrointestinal shedding of SARS-CoV-2 was detected in any of the children. Shedding of SARS-CoV-2 could be detected in two staff members from distinct day care centres. One was asymptomatic at the time of testing, and one was symptomatic and did not attend the facility on that day.

Detection of either respiratory or gastrointestinal shedding of SARS-CoV-2 RNA in children and staff members attending day care centres was rare in the context of limited community activity and with infection prevention measures in the facilities in place."

Clin Infect Dis: [Distinct disease severity between children and older adults with COVID-19: Impacts of ACE2 expression, distribution, and lung progenitor cells](#)

"Children and older adults with coronavirus disease 2019 (COVID-19) display a distinct spectrum of disease severity yet the risk factors aren't well understood. We sought to examine the expression pattern of angiotensin-converting enzyme 2 (ACE2), the cell-entry

receptor for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the role of lung progenitor cells in children and older patients.

We retrospectively analysed clinical features in a cohort of 299 patients with COVID-19. The expression and distribution of ACE2 and lung progenitor cells were systematically examined using a combination of public single-cell RNA-seq datasets, lung biopsies, and ex vivo infection of lung tissues with SARS-CoV-2 pseudovirus in children and older adults. We also followed up patients who had recovered from COVID-19.

Compared with children, older patients (> 50 yrs.) were more likely to develop into serious pneumonia with reduced lymphocytes and aberrant inflammatory response (p = 0.001). The expression level of ACE2 and lung progenitor cell markers were generally decreased in older patients. Notably, ACE2 positive cells were mainly distributed in the alveolar region, including SFTPC positive cells, but rarely in airway regions in the older adults (p < 0.01). The follow-up of discharged patients revealed a prolonged recovery from pneumonia in the older (p < 0.025).

Compared to children, ACE2 positive cells are generally decreased in older adults and mainly presented in the lower pulmonary tract. The lung progenitor cells are also decreased. These risk factors may impact disease severity and recovery from pneumonia caused by SARS-Cov-2 infection in older patients."

02 January 2021

Am J Hypertens: [High systolic blood pressure at hospital admission is an important risk factor in models predicting outcome of COVID-19 patients](#)

"The risk that COVID-19 patients develop critical illness that can be fatal depends on their age and immune status and may also be affected by comorbidities like hypertension. The goal of this study was to develop models that predict outcome using parameters collected at admission to the hospital.

This is a retrospective single-center cohort study of COVID-19 patients at the Seventh Hospital of Wuhan City, China. Forty-three demographic, clinical and laboratory parameters collected at admission plus discharge/death status, days from COVID-19 symptoms onset and days of hospitalization were analyzed. From 157 patients, 120 were discharged and 37 died. Pearson correlations showed that hypertension and systolic blood pressure (SBP) were associated with death and respiratory distress parameters. A penalized logistic regression model efficiently predicts the probability of death with 13 of 43 variables. A regularized Cox regression model predicts the probability of survival with 7 of above 13 variables. SBP but not hypertension was a covariate in both mortality and survival prediction models. SBP was elevated in deceased compared to discharged COVID-19 patients.

Using an unbiased approach, we developed models predicting outcome of COVID-19 patients based on data available at hospital admission. This can contribute to evidence-based risk prediction and appropriate decision-making at hospital triage to provide the most appropriate care and ensure the best patient outcome. High SBP, a cause of end-organ damage and an important comorbid factor, was identified as a covariate in both mortality and survival prediction models."

01 January 2021

Eur Arch Otorhinolaryngol: [Quantitative evaluation and progress of olfactory dysfunction in COVID-19](#)

"Patients who described new-onset olfactory dysfunction, who were treated in the COVID-19 departments of our hospital and whose PCR tests demonstrated SARS-CoV-2 presence were included in the study and they were investigated prospectively. Clinical information of all the patients was taken and the levels of olfactory function were detected using the Brief Smell Identification Test (BSIT). Scores equal to or below 8 are considered as olfactory dysfunction. Patients who were followed up for 3 months were reevaluated with the BSIT test at the end of the third month and the progression of the symptom was investigated.

The mean BSIT test score of the 42 patients (23 female patients, 19 male patients, mean age: 41.2 ± 14.6) was 5.2 ± 2.2. There was severe olfactory dysfunction in 16.7% of the patients (0-2 points), moderate olfactory dysfunction in 31% (3-5 points), and mild olfactory dysfunction in 52.4% (6-8 points). After a follow-up for 3 months, full recovery was observed in 36 patients (85.7%) and the mean test score rose to 9.9 ± 1.8. Although olfactory dysfunction persisted in 6 patients, an elevation in test scores was noted. Olfactory dysfunction was the first symptom in 17 patients (40%) and the other symptoms occurred after 2 days (1-6) on average.

We investigated olfactory dysfunction caused by COVID-19 using BSIT, and found a high rate of moderate-mild level symptoms with a high level of recovery in the 3-month follow-up. The finding revealing that olfactory dysfunction was the first symptom in 40% of the patients suggests the importance of inquiry on olfactory functions for the early diagnosis of the disease."
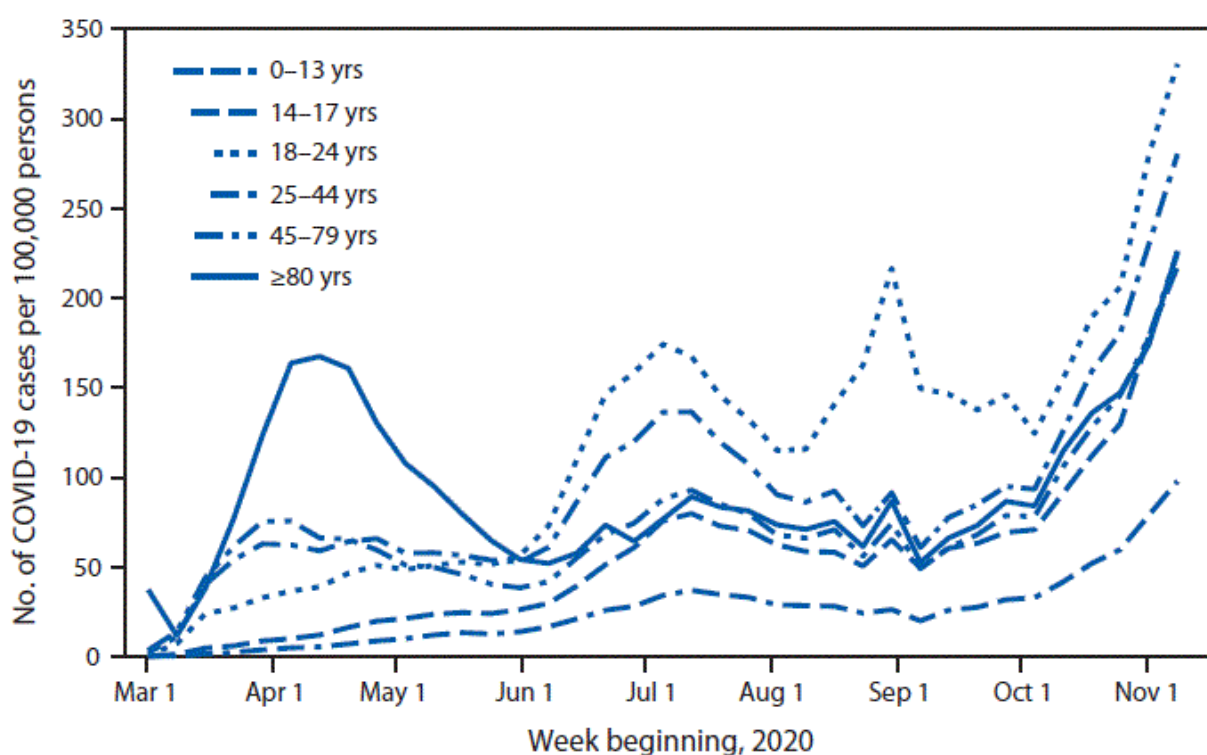
MMWR: [Implications of Shortened Quarantine Among Household Contacts of Index Patients with Confirmed SARS-CoV-2 Infection — Tennessee and Wisconsin, April–September 2020](#)

"What is already known about this topic? After exposure to COVID-19, a 14-day quarantine period can prevent further spread but might be challenging to maintain.

What is added by this report? Among persons exposed to COVID-19 in the household who were asymptomatic and had negative laboratory test results through 7 days after symptom onset in the index patient, 19% experienced symptoms or received positive test results in the following week.

What are the implications for public health practice? A shorter quarantine after household exposure to COVID-19 might be easier to adhere to but poses some risk for onward transmission. Persons released from quarantine before 14 days should continue to avoid close contact and wear masks when around others until 14 days after their last exposure."

MMWR: COVID-19 Stats: COVID-19 Incidence,* by Age Group† — United States, March 1–November 14, 2020§

* Incidence = cases per 100,000 calculated using 2019 U.S. Census population.

† Age data for COVID-19 cases are based on case report forms submitted by state and territorial jurisdictions for confirmed and probable cases. Reporting for some jurisdictions is incomplete. Age is missing for 1% of case reports.

§ Data are provisional and subject to change.

MMWR: [Performance of an Antigen-Based Test for Asymptomatic and Symptomatic SARS-CoV-2 Testing at Two University Campuses — Wisconsin, September–October 2020](#)

"What is already known about this topic? Antigen tests for SARS-CoV-2 are inexpensive and can return results within 15 minutes, but test performance data in asymptomatic and symptomatic persons are limited.

What is added by this report? Compared with real-time reverse transcription–polymerase chain reaction (RT-PCR) testing, the Sofia antigen test had a sensitivity of 80.0% and specificity of 98.9% among symptomatic persons; accuracy was lower (sensitivity 41.2% and specificity 98.4%) when used for screening of asymptomatic persons.

What are the implications for public health practice? To account for reduced antigen test accuracy, confirmatory testing with a nucleic acid amplification test (e.g., RT-PCR) should be considered after negative antigen test results in symptomatic persons and positive antigen test results in asymptomatic persons."

31 December 2020

J Allergy Clin Immunol Pract: [mRNA Vaccines to Prevent COVID-19 Disease and Reported Allergic Reactions: Current Evidence and Approach](#)

"The recent Food and Drug Administration (FDA) approval of two highly effective COVID-19 vaccines from Pfizer-BioNtech and Moderna has brought hope to millions of American in the midst of an ongoing global pandemic. The FDA Emergency Use Authorization guidance for both vaccines is to not administer the vaccine to individuals with known history of a severe allergic reaction (e.g., anaphylaxis) to any component of the COVID-19 vaccine. The Centers for Diseases Control and Prevention (CDC) advises that all patients should be observed for 15 minutes after COVID-19 vaccination and staff must be able to identify and manage anaphylaxis. Post-FDA approval, despite very strong safety signals in both phase 3 trials, reports of possible allergic reactions have raised public concern. To provide reassurance and support during widespread vaccination across America, allergists must offer clear guidance to patients based on the best information available, but also in accordance with the broader recommendations of our US regulatory agencies. This review summarizes vaccine allergy epidemiology and proposes risk stratification schema: (1) for individuals with different allergy histories to safely receive their first COVID-19 vaccine and (2) for individuals who develop a reaction to their first dose of COVID-19 vaccine."

PLoS One: Gender in the time of COVID-19: Evaluating national leadership and COVID-19 fatalities

"In this paper we explore whether countries led by women have fared better during the COVID-19 pandemic than those led by men. Media and public health officials have lauded the perceived gender-related influence on policies and strategies for reducing the deleterious effects of the pandemic. We examine this proposition by analyzing COVID-19-related deaths globally across countries led by men and women. While we find some limited support for lower reported fatality rates in countries led by women, they are not statistically significant. Country cultural values offer more substantive explanation for COVID-19 outcomes. We offer several potential explanations for the pervasive perception that countries led by women have fared better during the pandemic, including data selection bias and Western media bias that amplified the successes of women leaders in OECD countries."

30 December 2020

Cancer: Mortality in hospitalized patients with cancer and coronavirus disease 2019: A systematic review and meta-analysis of cohort studies

"A systematic review was performed using the Medline, Embase, and CENTRAL databases and the World Health Organization Novel Coronavirus website to identify studies that reported mortality and characteristics of patients with cancer who were diagnosed with COVID-19. The primary study outcome was mortality, defined as all-cause mortality or in-hospital mortality within 30 days of initial COVID-19 diagnosis. The pooled proportion of mortality was estimated using a random-effects model, and study-level moderators of heterogeneity were assessed through subgroup analysis and metaregression.

Among 2922 patients from 13 primarily inpatient studies of individuals with COVID-19 and cancer, the pooled 30-day mortality rate was 30% (95% CI, 25%-35%). The overall pooled 30-day mortality rate among 624 patients from 5 studies that included a mixture of inpatient and outpatient populations was 15% (95% CI, 9%-22%). Among the hospitalized studies, the heterogeneity (I2 statistic) of the meta-analysis remained high (I2, 82%). Cancer subtype (hematologic vs solid), older age, male sex, and recent active cancer therapy each partially explained the heterogeneity of mortality reporting. In multivariable metaregression, male sex, along with an interaction between the median patient age and recent active cancer therapy, explained most of the between-study heterogeneity (R2, 96%).

Pooled mortality estimates for hospitalized patients with cancer and COVID-19 remain high at 30%, with significant heterogeneity across studies. Dedicated community-based studies

are needed in the future to help assess overall COVID-19 mortality among the broader population of patients with cancer."

NEJM: Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine

Moderna vaccine: "This phase 3 randomized, observer-blinded, placebo-controlled trial was conducted at 99 centers across the United States. Persons at high risk for SARS-CoV-2 infection or its complications were randomly assigned in a 1:1 ratio to receive two intramuscular injections of mRNA-1273 (100 μg) or placebo 28 days apart. The primary end point was prevention of Covid-19 illness with onset at least 14 days after the second injection in participants who had not previously been infected with SARS-CoV-2.

The trial enrolled 30,420 volunteers who were randomly assigned in a 1:1 ratio to receive either vaccine or placebo (15,210 participants in each group). More than 96% of participants received both injections, and 2.2% had evidence (serologic, virologic, or both) of SARS-CoV-2 infection at baseline. Symptomatic Covid-19 illness was confirmed in 185 participants in the placebo group (56.5 per 1000 person-years; 95% confidence interval [CI], 48.7 to 65.3) and in 11 participants in the mRNA-1273 group (3.3 per 1000 person-years; 95% CI, 1.7 to 6.0); vaccine efficacy was 94.1% (95% CI, 89.3 to 96.8%; P<0.001). Efficacy was similar across key secondary analyses, including assessment 14 days after the first dose, analyses that included participants who had evidence of SARS-CoV-2 infection at baseline, and analyses in participants 65 years of age or older. Severe Covid-19 occurred in 30 participants, with one fatality; all 30 were in the placebo group. Moderate, transient reactogenicity after vaccination occurred more frequently in the mRNA-1273 group. Serious adverse events were rare, and the incidence was similar in the two groups.

The mRNA-1273 vaccine showed 94.1% efficacy at preventing Covid-19 illness, including severe disease. Aside from transient local and systemic reactions, no safety concerns were identified."

NEJM: Microvascular Injury in the Brains of Patients with Covid-19

Letter to the editor: "In a convenience sample of patients who had died from Covid-19, multifocal microvascular injury was observed in the brain and olfactory bulbs by means of magnetic resonance microscopy, histopathological evaluation, and immunohistochemical analysis of corresponding sections, without evidence of viral infection. These findings may inform the interpretation of changes observed on magnetic resonance imaging of punctate hyperintensities and linear hypointensities in patients with Covid-19. Because of the limited clinical information that was available, no conclusions can be drawn in relation to neurologic features of Covid-19."

29 December 2020

Clin Infect Dis: [Trends in U.S. outpatient antibiotic prescriptions during the COVID-19 pandemic](#)

"We used data from the IQVIA Total Patient Tracker to estimate the monthly number of patients dispensed antibiotic prescriptions from retail pharmacies in January 2017-May 2020. We averaged estimates from 2017-2019 and defined expected seasonal change as the average percent change from January to May 2017-2019. We calculated percentage point and volume changes in the number of patients dispensed antibiotics from January to May 2020 exceeding expected seasonal changes. We also calculated average percent change in number of patients dispensed antibiotics per month in 2017- 2019 versus 2020. Data were analyzed overall and by agent, class, patient age, state, and prescriber specialty.

From January to May 2020, the number of patients dispensed antibiotic prescriptions decreased from 20.3 to 9.9 million, exceeding seasonally expected decreases by 33 percentage points and 6.6 million patients. The largest changes in 2017-2019 versus 2020 were observed in April (-39%) and May (-42%). The number of patients dispensed azithromycin increased from February to March 2020 then decreased. Overall, beyond-expected decreases were greatest among children (≤19 years) and agents used for respiratory infections, dentistry, and surgical prophylaxis.

From January 2020 to May 2020, the number of outpatients with antibiotic prescriptions decreased substantially more than would be expected due to seasonal trends alone, possibly related to the COVID-19 pandemic and associated mitigation measures."

J Antimicrob Chemother: [Predictors of hospital-acquired bacterial and fungal superinfections in COVID-19: a prospective observational study](#)

"Prospective, observational study including patients with COVID-19 consecutively admitted to the University Hospital of Pisa, Italy, between 4 March and 30 April 2020. Clinical data and outcomes were registered. Superinfection was defined as a bacterial or fungal infection that occurred ≥48 h after hospital admission. A multivariate analysis was performed to identify factors independently associated with superinfections.

Overall, 315 patients with COVID-19 were hospitalized and 109 episodes of superinfections were documented in 69 (21.9%) patients. The median time from admission to superinfection was 19 days (range 11–29.75). Superinfections were caused by Enterobacterales (44.9%), non-fermenting Gram-negative bacilli (15.6%), Gram-positive bacteria (15.6%) and fungi (5.5%). Polymicrobial infections accounted for 18.3%. Predictors of superinfections were: intestinal colonization by carbapenem-resistant Enterobacterales (OR 16.03, 95% CI 6.5–39.5, P < 0.001); invasive mechanical ventilation (OR 5.6, 95% CI 2.4–13.1, P < 0.001); immunomodulatory agents (tocilizumab/baricitinib) (OR 5.09, 95% CI 2.2–11.8, P < 0.001); C-reactive protein on admission >7 mg/dl (OR 3.59, 95% CI 1.7–7.7,

P = 0.001); and previous treatment with piperacillin/tazobactam (OR 2.85, 95% CI 1.1–7.2, P = 0.028). Length of hospital stay was longer in patients who developed superinfections ompared with those who did not (30 versus 11 days, P < 0.001), while mortality rates were similar (18.8% versus 23.2%, P = 0.445).

The risk of bacterial and fungal superinfections in COVID-19 is consistent. Patients who need empiric broad-spectrum antibiotics and immunomodulant drugs should be carefully selected. Infection control rules must be reinforced."

23 December 2020

Am J Health Promot: Knowledge, Perceptions, and Preferred Information Sources Related to COVID-19 Among Healthcare Workers: Results of a Cross Sectional Survey

"To compare COVID-19 related knowledge, perceptions, and preferred information sources between healthcare workers and non-healthcare workers.

Generalized linear mixed-effects models to assess comparisons between clinical decision makers (CDM), non-clinical decision makers working in healthcare (non-CDM) and non-healthcare workers (non-HCW).

CDMs (n = 91) had higher overall knowledge than non-CDMs (n = 854; OR 1.81 [1.51, 2.17], p < .05). Overall knowledge scores were not significantly different between non-CDMs (n = 854) and non-HCW (n = 4,966; OR 1.03 [0.97, 1.09], p > .05).

The findings suggest a need for improved education about COVID-19 for healthcare workers who are not clinical decision makers, as they play key roles in patient perceptions and compliance with preventive medicine during primary care visits."

Am J Physiol Lung Cell Mol Physiol: Healing after Covid-19: Are Survivors at Risk for Development of Pulmonary Fibrosis?

"The novel SARS-CoV-2 coronavirus, responsible for Covid-19 disease, was first reported in Wuhan, China in December of 2019. The virus rapidly spread, and the World Health Organization declared a pandemic by March 2020. With millions of confirmed cases world-wide, there is growing concern and considerable debate regarding the potential for coronavirus infection to contribute to an appreciable burden of chronic respiratory symptoms or fibrotic disease among recovered individuals. As the first case of Covid-19 was documented less than one year ago, data regarding long-term clinical outcomes are not yet available and predictions for long-term outcome are speculative at best. However, due to the staggering number of cases and the severity of disease in many individuals, there is a critical need to consider the potential long-term implications of Covid-19. This review examines current basic and clinical data regarding fibrogenic mechanisms of viral injury in

the context of SARS-CoV-2. Several intersecting mechanisms between coronavirus infection and fibrotic pathways are discussed to highlight factors and processes that may be targetable to improve patient outcome. Reports of post-infection sequelae from previous coronavirus outbreaks are presented toward the goal of improved recognition of potential contributing risk factors for fibrotic disease."

ICYMI (older than the last 2 weeks)

Am J Trop Med Hyg: [Modeling the Stability of SARS-CoV-2 on Personal Protective Equipment (PPE)](online 22 December 2020)

"We modeled the stability of SARS-CoV-2 on personal protective equipment (PPE) commonly worn in hospitals when carrying out high-risk airway procedures. Evaluated PPE included the visors and hoods of two brands of commercially available powered air purifying respirators, a disposable face shield, and Tyvek coveralls. Following an exposure to 4.3 log10 plaque-forming units (PFUs) of SARS-CoV-2, all materials displayed a reduction in titer of > 4.2 log10 by 72 hours postexposure, with detectable titers at 72 hours varying by material (1.1-2.3 log10 PFU/mL). Our results highlight the need for proper doffing and disinfection of PPE, or disposal, to reduce the risk of SARS-CoV-2 contact or fomite transmission."

Ann Intern Med: [COVID-19 Vaccine: Promoting Vaccine Acceptance](online 21 December 2020)

"Editors of the Annals of Internal Medicine discuss methods to address the challenge of vaccine acceptance despite misinformation on social media. The authors suggest battling misinformation by providing accurate information about COVID-19 vaccination, validating any concerns about the vaccine, and emphasizing the goals of vaccination. A link to the recorded video of a Q&A session with the panelists is available in the article."

Hum Reprod: [Persistence of SARS-CoV-2 in the first trimester placenta leading to transplacental transmission and fetal demise from an asymptomatic mother](online 21 December 2020)

"Coronavirus disease 2019 (COVID-19) is caused by infection of the respiratory tract by SARS-CoV-2 which survives in the tissues during the clinical course of infection but there is limited evidence on placental infection and vertical transmission of SARS-CoV-2. The impact of COVID-19 in first trimester pregnancy remains poorly understood. Moreover, how long SARS-CoV-2 can survive in placenta is unknown. Herein we report a case of a pregnant woman in the first trimester who tested positive for SARS-CoV-2 at 8 weeks of gestation although her clinical course was asymptomatic. At 13 weeks of gestation, her throat swab tested negative for SARS-CoV-2 but viral RNA was detected in the placenta and the Spike (S) proteins (S1 and S2) were immunolocalized in cytotrophoblast and syncytiotrophoblast cells of the placental villi. Histologically, the villi were generally avascular with peri-villus fibrin

deposition and in some areas the syncytiotrophoblast layer appeared lysed. The decidua also had fibrin deposition with extensive leucocyte infiltration suggestive of inflammation. The SARS-CoV-2 crossed the placental barrier, as the viral RNA was detected in the amniotic fluid and the S proteins were detected in the fetal membrane. Ultrasonography revealed extensively subcutaneous edema with pleural effusion suggestive of hydrops fetalis and the absence of cardiac activity indicated fetal demise. This is the first study to provide concrete evidence of persistent placental infection of SARS-CoV-2 and its congenital transmission associated with hydrops fetalis and intrauterine fetal demise in early pregnancy."

Popul Health Manag: [Return to Work: Managing Employee Population Health During the COVID-19 Pandemic](#) (online 21 December 2020)

"Coronavirus disease-2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), has abruptly transformed the outlook of employer health benefits plans for 2020 and 2021. Containing the spread of the virus and facilitating care of those infected have quickly emerged as immediate priorities. Employers have adjusted health benefits coverage to make COVID-19 testing and treatment accessible and remove barriers to care in order to facilitate the containment of the disease. Employers also are introducing strategies focused on testing, surveillance, workplace modifications, and hygiene to keep workforces healthy and workplaces safe. This paper is intended to provide evidence-based perspectives for self-insured employers for managing population health during the COVID-19 pandemic. Such considerations include (1) return to work practices focused on mitigating the spread of COVID-19 through safety practices, testing and surveillance; and (2) anticipating the impact of COVID-19 on health benefits and costs (including adaptations in delivery of care, social and behavioral health needs, and managing interrupted care for chronic conditions)."

Tokai J Exp Clin Med: [Prediction of Potential Respiratory Tract Infection from SARS-CoV-2 Through Hand-to-face Contact Transmission](#) (online 20 December 2020)

"The Ministry of Health of China reported a cluster of severe pneumonia cases of unknown etiology in Wuhan city, the cause of which was later identified as a novel coronavirus. However, the risk of infection through indirect transmission routes remains unclear.

A mathematical modeling approach was used to estimate the risk of infection through hand-to-face contact. The probability of infection for various routes of transmission through face-touching behavior was then calculated.

The probabilities of infection through hand-to-mouth transmission from nonporous and porous environments had log-normal (LN) distributions with geometric means (GMs) of 0.0116 and 0.0002, geometric deviations (GDs) of 2.9822 and 3.5560, and medians of 0.0127 and 0.0002, respectively, while those through hand-to-nose transmission from nonporous and porous environments had LN distributions with GMs of 0.0006 and 0.0000,

GDs of 43.2310 and 47.3372, and medians of 0.0009 and 0.0000, respectively. The probability of infection through hand-to-eye transmission from a nonporous environment had a beta distribution with α = 2.38803, β = 13.60457, a minimum of 0.0045, a maximum of 0.9021, and a median of 0.1179, while that from a porous environment had a Weibull distribution with a scale parameter of 0.0030, a shape parameter of 1.323, and a median of 0.0023.

SARS-CoV-2 infection will occur through hand-to-face contact via contaminated environment."

Ann Intensive Care: [Characteristics and risk factors associated with critical illness in pediatric COVID-19](#) (online 19 December 2020)

"While much has been reported regarding the clinical course of COVID-19 in children, little is known regarding factors associated with organ dysfunction in pediatric COVID-19. We describe critical illness in pediatric patients with active COVID-19 and identify factors associated with PICU admission and organ dysfunction. This is a retrospective chart review of 77 pediatric patients age 1 day to 21 years admitted to two New York City pediatric hospitals within the Northwell Health system between February 1 and April 24, 2020 with PCR + SARS-CoV-2. Descriptive statistics were used to describe the hospital course and laboratory results and bivariate comparisons were performed on variables to determine differences.

Forty-seven patients (61%) were admitted to the general pediatric floor and thirty (39%) to the PICU. The majority (97%, n = 75) survived to discharge, 1.3% (n = 1) remain admitted, and 1.3% (n = 1) died. Common indications for PICU admission included hypoxia (50%), hemodynamic instability (20%), diabetic ketoacidosis (6.7%), mediastinal mass (6.7%), apnea (6.7%), acute chest syndrome in sickle cell disease (6.7%), and cardiac dysfunction (6.7%). Of PICU patients, 46.7% experienced any significant organ dysfunction (pSOFA > = 2) during admission. Patients aged 12 years or greater were more likely to be admitted to a PICU compared to younger patients (p = 0.015). Presence of an underlying comorbidity was not associated with need for PICU admission (p = 0.227) or organ dysfunction (p = 0.87). Initial white blood cell count (WBC), platelet count, and ferritin were not associated with need for PICU admission. Initial C-reactive protein was associated with both need for PICU admission (p = 0.005) and presence of organ dysfunction (p = 0.001). Initial WBC and presenting thrombocytopenia were associated with organ dysfunction (p = 0.034 and p = 0.003, respectively).

Age over 12 years and initial CRP were associated with need for PICU admission in COVID-19. Organ dysfunction was associated with elevated admission CRP, elevated WBC, and thrombocytopenia. These factors may be useful in determining risk for critical illness and organ dysfunction in pediatric COVID-19."

Clin Infect Dis: [Evaluating the Efficacy of COVID-19 Vaccines](#) (online 19 December 2020)

"A large number of studies are being conducted to evaluate the efficacy and safety of candidate vaccines against novel coronavirus disease-2019 (COVID-19). Most Phase 3 tri- als have adopted virologically confirmed symptomatic COVID-19 disease as the primary efficacy endpoint, although laboratory-confirmed SARS-CoV-2 is also of interest. In addi- tion, it is important to evaluate the effect of vaccination on disease severity. To provide a full picture of vaccine efficacy and make efficient use of available data, we propose using SARS-CoV-2 infection, symptomatic COVID-19, and severe COVID-19 as dual or triple pri- mary endpoints. We demonstrate the advantages of this strategy through realistic simulation studies. Finally, we show how this approach can provide rigorous interim monitoring of the trials and efficient assessment of the durability of vaccine efficacy."

Ann Neurol: [Pediatric Ischemic Stroke: An Infrequent Complication of SARS-CoV-2](#) (online 17 December 2020)

"Severe complications of SARS-CoV-2 include arterial ischemic stroke (AIS) in adults and pediatric multisystem inflammatory syndrome. Whether stroke is a frequent complication of pediatric SARS-CoV-2 is unknown. This study aimed to determine the proportion of pediatric SARS-CoV-2 cases with ischemic stroke and the proportion of pediatric strokes with SARS-CoV-2 in the first three months of the pandemic in an international cohort.

We surveyed 61 international sites with pediatric stroke expertise. Survey questions included: numbers of hospitalized pediatric (≤18 years) SARS-CoV-2 patients; numbers of incident neonatal and childhood ischemic strokes; frequency of SARS-CoV-2 testing for pediatric stroke patients; and numbers of stroke cases positive for SARS-CoV-2 March 1– May 31, 2020.

Of 42 centers with SAR-CoV-2 hospitalization numbers, 8/971 (0.82%) with SARS-CoV-2 had ischemic strokes. Proportions of stroke cases positive for SARS-CoV-2 from March–May 2020 were: 1/108 neonatal AIS (0.9%), 0/33 neonatal cerebral sinovenous thrombosis (CSVT; 0%), 6/166 childhood AIS (3.6%), and 1/54 childhood CSVT (1.9%) cases. However, only 30.5% of neonates and 60% of children with strokes were tested for SARS-CoV-2. Therefore, these proportions represent 2.9%, 0%, 6.1%, and 3.0% of stroke cases tested for SARS-CoV-2. Seven of eight with SARS-CoV-2 had additional established stroke risk factors.

As in adults, pediatric stroke is an infrequent complication of SARS-CoV-2, and SARS-CoV-2 was detected in only 4.7% of pediatric ischemic stroke patients tested. However, <50% of strokes were tested. SARS-CoV-2 testing should be considered in pediatric stroke patients as the pandemic continues to determine SARS-CoV-2's role in pediatric stroke."

Neuropsychopharmacol Rep: Post-COVID-19 fatigue and anhedonia: A cross-sectional study and their correlation to post-recovery period (online 17 December 2020)

"This cross-sectional observational study aimed to investigate the occurrence of post-COVID-19 fatigue and anhedonia and whether the duration after 2 consecutive PCR-negative tests has an implication on the severity of the above-mentioned psychiatric manifestations.

Socio-demographic characteristics of 200 post-COVID-19 patients were collected, and also, the self-assessment anhedonia scale was used to evaluate the degree of anhedonia. Fatigue assessment scale used to investigate this domain. The study targeted to find a possible correlation between the period after recovery and the other variables including anhedonia and fatigue.

The study revealed high scores of different subtypes of self-assessment anhedonia scale (including total intensity, total frequency, and total changes scores) in the studied group, also high score of fatigue assessment scale in those patients. Positive statistically significant correlation between anhedonia and fatigue in post-COVID-19 group, also negative statistically significant correlation between duration after recovery and the other 2 variables(anhedonia and fatigue) in the examined patients.

Post-COVID-19 fatigue and anhedonia were prevalent and commonly reported in the post-COVID-19 period, also the duration after 2 consecutive negative PCR tests has an implication on the severity rating scale of both anhedonia and fatigue. These findings directed our attention to those reported manifestations which affected the socio-occupational functioning of the individuals during this whole world pandemic."

Selected Literature: Preprints

Preprints are found on preprint servers such as arXiv, bioRxiv, and medRxiv; they are commonly used for biomedical research. Preprints may later be published in peer-reviewed journals. Per medRxiv: "Preprints are preliminary reports of work that have not been certified by peer review. They should not be relied on to guide clinical practice or health-related behavior and should not be reported in news media as established information."

medRxiv: Construction of a demand and capacity model for intensive care and hospital ward beds, and mortality from COVID-19 (posted 06 January 2021)

"Background This paper describes the construction of a model used to estimate the number of excess deaths that could be expected as a direct consequence of a lack of hospital bed and intensive care unit (ICU) capacity.

Methods A series of compartmental models was used to estimate the number of deaths under different combinations of care required (ICU or ward), and care received (ICU, ward or no care) in England up to the end of April 2021. Model parameters were sourced from publicly available government information, organisations collating COVID-19 data and calculations using existing parameters. A compartmental sub-model was used to estimate the mortality scalars that represent the increase in mortality that would be expected from a lack of provision of an ICU or general ward bed when one is required. Three illustrative scenarios for admissions numbers, 'Optimistic', 'Middling' and 'Pessimistic', are described showing how the model can be used to estimate mortality rates under different scenarios of capacity.

Results The key output of our collaboration was the model itself rather than the results of any of the scenarios. The model allows a user to understand the excess mortality impact arising as a direct consequence of capacity being breached under various scenarios or forecasts of hospital admissions. The scenarios described in this paper are illustrative and are not forecasts. There were no excess deaths from a lack of capacity in any of the 'Optimistic' scenario applications in sensitivity analysis. Several of the 'Middling' scenario applications under sensitivity testing resulted in excess deaths directly attributable to a lack of capacity. Most excess deaths arose when we modelled a 20% reduction comparted to best estimate ICU capacity. This led to 597 deaths (0.7% increase). All the 'Pessimistic' scenario applications under sensitivity analysis had excess deaths. These ranged from 49,219 (19.4% increase) when we modelled a 20% increase in ward bed availability over the best-estimate, to 103,845 (40.9% increase) when we modelled a 20% shortfall in ward bed availability below the best-estimate. The emergence of a new, more transmissible variant (VOC 202012/01) increases the likelihood of real-world outcomes at, or beyond, those modelled in our 'Pessimistic' scenario. The results can be explained by considering how capacity evolves in each of the scenarios. In the Middling scenario, whilst ICU capacity may be high and even possibly breached, there remains sufficient ward capacity to take lives who need either ward or ICU support, keeping excess deaths relatively low. However, the Pessimistic scenario sees ward capacity breached, and in many scenarios for a period of several weeks, resulting in much higher mortality in those lives who require care but do not receive it.

Conclusions No excess deaths from breaching capacity would be expected under the unadjusted 'Optimistic' assumptions of demand. The 'Middling' scenario could result in some excess deaths from breaching capacity, though these would be small (0.7% increase) relative to the total number of deaths in that scenario. The 'Pessimistic' scenario would certainly result in significant excess deaths from breaching capacity. Our sensitivity analysis indicated a range between 49,219 (19.4% increase) and 103,845 (40.9% increase) excess deaths. Without the new variant, exceeding capacity for hospital and ICU beds was not the

most likely outcome but given the new variant it now appears more plausible and, if so, would result in a substantial increase in the number of deaths from COVID-19."

medRxiv: [Mental health of health care workers during the COVID-19 pandemic and evidence-based frameworks for mitigation: A rapid review](#) (posted 04 January 2021)

"Background: The ongoing COVID-19 pandemic has profoundly affected the mental health of health care workers (HCWs), and optimal strategies to provide psychological support for HCWs are not currently established.

Aims: To rapidly review recently-published literature on the mental health of HCWs during the COVID-19 pandemic.

Methods: Query of all quantitative research through the PubMed database on the mental health of HCWs during the COVID-19 pandemic which utilized validated mental health instruments. 723 articles were screened and 87 articles were included.

Results: Nearly all included studies were cross-sectional, survey-based assessments of the prevalence of and risk factors for mental illness. Only one interventional study was identified. Prevalence of mental health outcomes varied widely: 7.0-97.3% anxiety, 10.6-62.1% depression, 2.2-93.8% stress, 3.8-56.6% post traumatic stress, 8.3-88.4% insomnia, and 21.8-46.3% burnout. Risk and protective factors were identified in personal and professional domains, including degree of COVID-19 exposure, adequacy of protective equipment, and perception of organizational support.

Conclusions: The myriad risk factors for poor mental health among HCWs suggests that a comprehensive psychosocial support model with individual- and organization-level interventions is necessary. Further longitudinal research on specific evidence-based interventions to mitigate adverse mental health outcomes among HCWs is urgently needed as the pandemic continues."

medRxiv: [Burden of predominant psychological reactions among the healthcare workers and general during COVID-19 pandemic phase: a systematic review and meta-analysis](#) (posted 04 January 2021)

"Aim: Present systematic review and meta-analysis examined the burden of psychological reactions predominantly anxiety, depression, stress and insomnia during novel COVID-19 pandemic phase among the frontline healthcare, non-frontline healthcare and general.

Methodology: PubMed, EMBASE and SCOPUS were searched for studies between Jan 1, 2020 to May 25, 2020. Brief protocol of the systematic review was registered with the PROSPERO database, (CRD42020186229). Any study that reported the burden of at least one of psychological reactions including anxiety or depression or stress or insomnia was

eligible. Heterogeneity was assessed using I2 statistic and results were synthesized using random effect meta-analysis.

Results: Out of 52eligible studies, 43 reported anxiety, 43 reported depression, 20 reported stress and 11 reported insomnia. Overall prevalence for anxiety, depression, stress and insomnia were 26.6%, 26.2%,26.2% and 34.4% respectively. Anxiety and depression were found highest among the COVID-19 patients (43.3% and 51.75 respectively). Apart from COVID-19 patients, prevalence of anxiety, depression, stress and insomnia were found highest among the frontline healthcare (27.2%, 32.1%,55.6% and 34.4% respectively) as compared to general healthcare workers (26.9%, 15.7%, 7.0% and 34.0% respectively) and general population (25.9%, 25.9%,25.4% and 29.4% respectively).

Conclusion: Anxiety and depression were found highest among the COVID-19 patients. Apart from COVID-19 patients, the anxiety, depression, stress and insomnia were more prevalent among frontline healthcare workers compared to general. Such increased prevalence is prompting towards the global mental health emergency. Therefore a call of urgent attention and pan-region effective mental-health intervention are required to mitigate these psychological reactions."

medRxiv: COVID-19 vaccine acceptance among health care workers in the United States (posted 04 January 2021)

"Background: Acceptance of any COVID-19 vaccine is an important challenge to address and will play a major role in combating the pandemic. Healthcare workers (HCWs) are amongst the first group to receive the vaccination, so it is important to consider their attitudes about COVID-19 vaccination to better address barriers to widespread vaccination acceptance.

Methods: We conducted a cross-sectional study to assess the attitude of HCWs toward the COVID-19 vaccination. Data was collected between October 7th and November 9th, 2020. We received 4080 responses out of which 3479 were complete responses and were included in the final analysis.

Results: 36% of respondents were willing to take the vaccine as soon as it became available while 56% were not sure or would wait to review more data. Vaccine acceptance increased with increasing age, education, and income level. Lower acceptance was noted in females (31%), Black (10%), Hispanic (30%) and conservative/republican (21%) HCWs, and those working in a rural setting (26%). In the multinomial regression model, direct medical care providers and those with heart disease and cancer had a lower likelihood of waiting to review than accepting vaccines. Safety (69%), effectiveness (69%) and rapidity of development/approval (74%) were noted as the most common concerns regarding the COVID-19 vaccine in our survey.

Conclusion: Acceptance of the COVID-19 vaccine is low, with the majority of healthcare workers choosing to wait to review more data before deciding. Overall attitude toward vaccination was positive but specific concerns regarding the COVID-19 vaccine are prevalent. Differences in vaccine acceptance were noted along lines of social determinants of health which should be addressed to avoid magnifying health disparities."

bioRxiv: [The high infectivity of SARS-CoV-2 B.1.1.7 is associated with increased interaction force between Spike-ACE2 caused by the viral N501Y mutation](#) (posted 01 January 2021)

"The Spike glycoprotein receptor-binding domain (RBD) of SARS-CoV-2 mediates the viral particle's binding to the angiotensin-converting enzyme 2 (ACE2) receptor on the surface of human cells. Therefore, Spike-ACE2 interaction is a crucial determining factor for viral infectivity. A new phylogenetic group of SARS-CoV-2 (lineage B.1.1.7) has been recently identified in the COVID-19 Genomics UK Consortium dataset, which features an amino acid substitution in the Spike RBD (N501Y mutation). Infections with the SARS-CoV-2 lineage B.1.1.7 have been overgrowing in recent weeks in the United Kingdom, indicating an even greater spread capacity than that seen with previous strains of the novel coronavirus. We hypothesized that this rapid spreading/infectivity of the B.1.1.7 lineage might be due to changes in the interaction force between the mutant Spike RBD and ACE2. This study employed in silico methods involving mutagenesis (N501Y mutation) and interface analysis focusing on the Spike RDB-ACE2 interaction. The results showed that the SARS-CoV-2 N501Y mutant (lineage B.1.1.7) establishes a more significant number of interactions relating to the mutant residue Y501 (Spike RDB) with residues Y41 and K353 (ACE2). This finding shows that the increased infectivity of SARS-CoV-2 lineage B.1.1.7 is associated with the interaction force between the Spike RBD Y501 mutant residue with the ACE2 receptor, which in this strain is increased."

News in Brief

On Thursday, 07 January 2021, more than 4,000 people died of COVID-19 in the United States, making it the second day in a row of record deaths ([WashPo](#)).

The New Variant, B117

More alarms are being raised about the UK variant and its transmissibility ([Science](#)).

According to the CDC, we can expect rapid spread of the highly contagious coronavirus variant in the coming weeks; cases caused by B.1.1.7 have been documented in New York, Florida, Georgia, California, and Colorado ([WashPo](#)).

"Pfizer-BioNTech vaccine not affected by mutation seen in contagious coronavirus variant, study indicates" ([STAT](#); see [preprint at bioRxiv](#)).

Lockdowns

The UK has much more severe lockdowns in place as the new variant spreads (CNN).

Germany has extended its lockdown until the end of January (AP).

Japan entered a state of emergency for Tokyo as COVID-19 cases spike (NPR).

"Shijiazhuang, capital of Hebei, enters lockdown after accounting for most of province's 63 cases, the highest daily figure for months in mainland China" (SCMP).

Vaccines

Listen: "COVID-19 vaccine safety–anaphylaxis and allergic reactions" (JN Learning; 16 mins).

Dr. Fauci says holidays slowed things down and more time is needed to make progress with the vaccine rollout (NPR).

HHS announced funding ($22 Billion) to expand testing and support vaccine distribution at state and local level (HHS).

An EU commission has approved Modera's COVID-19 vaccine (AP).

After the UK recommended extending the interval between COVID-19 vaccine shots, an expert panel at the WHO adjusted its guidance to allow up to 6 week interval under certain circumstances (CIDRAP; see also WHO report).

It Has Come to This

"LA county paramedics told not to transport some patients with low chance of survival" (NPR).

As COVID-19 hospitalizations hit record highs, hospitals in Los Angeles are running out of oxygen for patients (WashPo).

Exposure, Testing, and Risks

An inflatable Christmas tree costume is blamed for a cluster of employee infections and 1 death in a San Jose hospital (WashPo).

"Coughing, sneezing, vomiting: Visibly ill people aren't being kept off planes" (LAT).

Long Reads

"The plague year: The mistakes and the struggles behind America's coronavirus tragedy" (New Yorker).

"The cruise ship suicides: Confined mostly to tiny cabins as the pandemic unfolded, crew members struggled to cope" (Bloomberg).

"China clamps down in hidden hunt for coronavirus origins" (AP).

"The lab-leak hypothesis: For decades, scientists have been hot-wiring viruses in hopes of preventing a pandemic, not causing one. But what if …?" (NY Mag)

Multimedia story: "The coronavirus pandemic in the voices of those who lived it: Glimpses into the lives that were changed by the covid-19 outbreak" (WashPo).

"A pandemic atlas: How COVID-19 took over the world in 2020" (AP).

And Now For Something Completely Different

"A little midwinter fun and beauty" (28 photos; Atlantic).

#15 --->

"A frozen rose is seen in a park in Dortmund, Germany, on November 30, 2020. Ina Fassbender / AFP / Getty" (used without permission)

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VA DOH: Virginia Department of Health. COVID-19 in Virginia. Link: http://www.vdh.virginia.gov/coronavirus/

Special Reports

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Selected Literature: Peer-Reviewed Journals

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